CSC

Leveraging a Flexible, Multidimensional Framework for Navy Fo[rce] Planning & Policy An[alysis]

Rick Loffredo
Sanjay Nayar

Navy Workforce
Conference, 20[...]

SKIPPER-III

- **Developed out of an NPRST R&D effort under EMPIPS**
- **Proven Utility in Enlisted Plans & Policy Branch**
- **Easy to Use Interface**
  - New visual and cognitive techniques facilitate usage and understanding
  - "Open Box" Model
- **Web-based**
- **Integrated, Expandable Modeling Framework**
  - Multi-year Inventory Projection (Operational)
  - EMF-based historical data can be overridden by ECMs
  - Recruit/A-School Optimization and Conversion Planning (Operational)
  - ALNAV LOS Force Strength Planning Support Capabilities (Operational)
  - Advancement and Rotation Models (in R&D)
- **Straightforward Development Path to Explore ACDU Enlisted C-School Planning, ACDU Officer Planning and Reserve Planning**

Enlisted Manpower and Personnel Integrated Planning System (EMPIPS)

- **An NPRST R&D effort**

  - ONR funded

- **Develop Prototype Models and a Portal for Work Process, Data and Tool Integration for use by Enlisted Personnel Planning Managers**

  - Development of Tools

  - Integration of Decision Support Systems

  - Integration of Data and Information

  - Web enabled

EMPIPS Portal & Force Health Monitor Vision

Accession, Advancement and Sea/Shore Rotation Model Processes
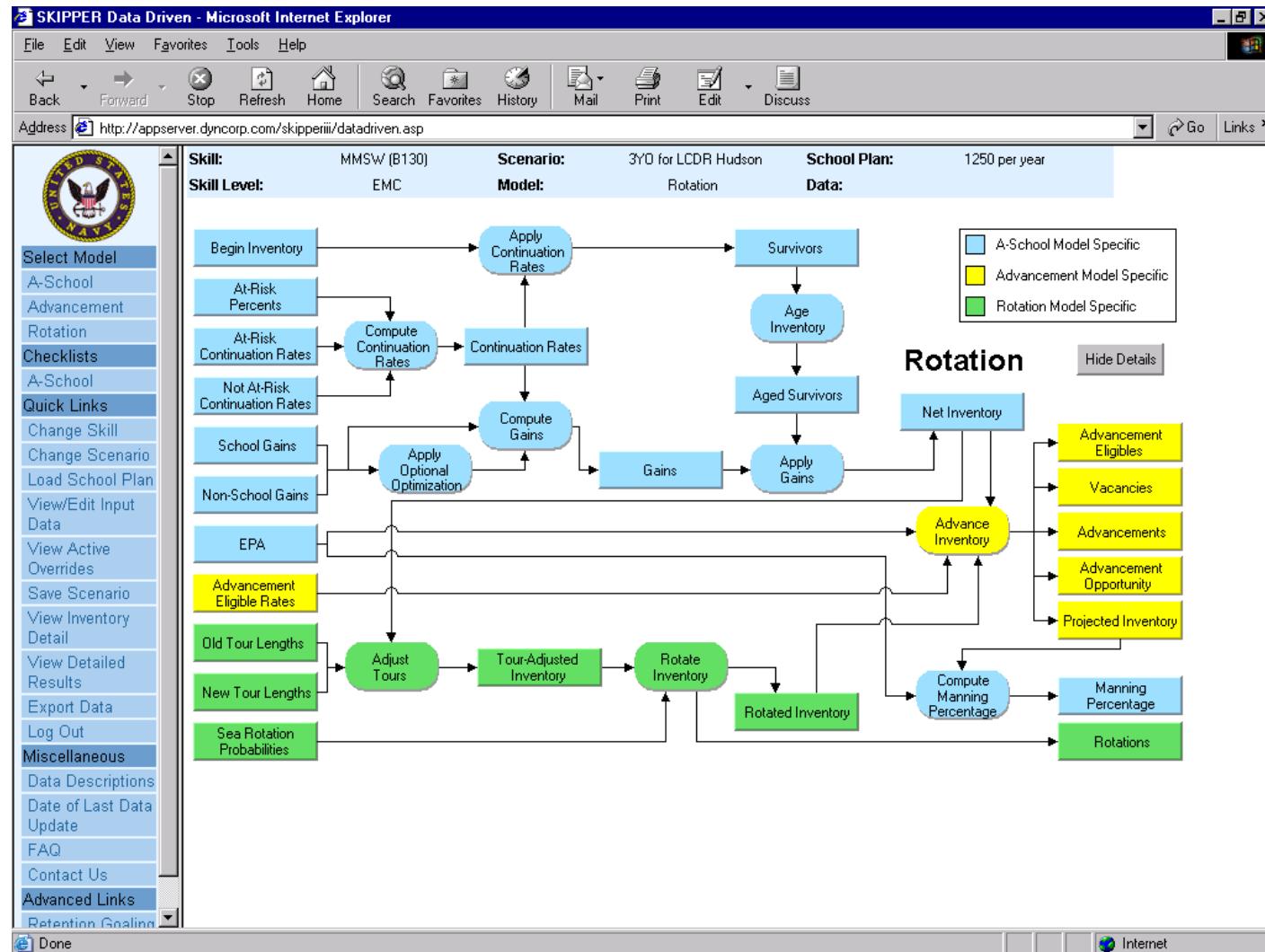
Projected Inventory Results

A-School Planning

- **"What If" Capability**
  - EPA targets, school lengths and capacities, and personnel flow rates overrideable
  - Powerful scenario management
- **Descriptive Mode**
  - Projects inventories and manning % given School and Non-School gains
- **Prescriptive Mode**
  - Determines optimal number of A-School inputs to meet EPA target
    - Unconstrained
    - Constrained Options
      - Maximum School input %deviations
      - Freeze/minimum School inputs
      - Enforce A-School capacity limits
      - Never exceed EPA

Entering Inputs

Overriding EPA

Model Run

SKIPPER Data Driven - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites History Mail Print Edit Discuss

Address http://empips.dyncorp.com/skipperiii/datadriven.asp

Skill:	MMSW (B130)	**Scenario:**		**School Plan:**	
Skill Level:	EMC	**Model:**	A-School	**Data:**	Total Non-School Gains

School Plan

Copy to Future FYs | Optimize School Inputs | Save School Plan | Load a Different School Plan | View Female Breakout

Select Model
A-School
Advancement
Rotation
Checklists
A-School
Quick Links
Change Skill
Change Scenario
Load School Plan
View/Edit Input Data
View Active Overrides
Save Scenario
View Inventory Detail
View Detailed Results
Export Data
Log Out
Miscellaneous
Data Descriptions
Date of Last Data Update
FAQ
Contact Us
Advanced Links
Retention Goaling

		FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
School Lengths	4Y0 A-School	12	12	12	12	12	12	12	12	12
	6Y0 A-School	0	0	0	0	0	0	0	0	0
Limit	A-School	2,850	2,850	2,850	2,850	2,850	2,850	2,850	2,850	2,850
Attrition	4Y0 A-School	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
	6Y0 A-School	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
4Y0	CNRC	730	730	730	730	730	730	730	730	730
	Fleet Input									
	Jobs Input									
	College Fund									
	NTSP									
	Misc Input									
	Input to TASP									
6Y0	Direct Input									
	Input to TASP									
Gains	Non-School	531	531	531	531	531	531	531	531	531
	A-School	979	700	700	700	700	700	700	700	700
	Total	1,510	1,231	1,231	1,231	1,231	1,231	1,231	1,231	1,231
Updated	Inventory	7,910	7,657	7,397	7,125	6,843	6,665	6,514	6,408	6,348
	Target EPA (100%)	8,008	7,642	7,354	7,318	6,928	6,771	6,771	6,771	6,771
	Inv/Target EPA (%)	98.77	100.19	100.58	97.36	98.77	98.43	96.2	94.63	93.75
	EPA	8,008	7,642	7,354	7,318	6,928	6,771	6,771	6,771	6,771
	Inventory/EPA (%)	98.77	100.19	100.58	97.36	98.77	98.43	96.2	94.63	93.75

Done   Internet

Using Optimization
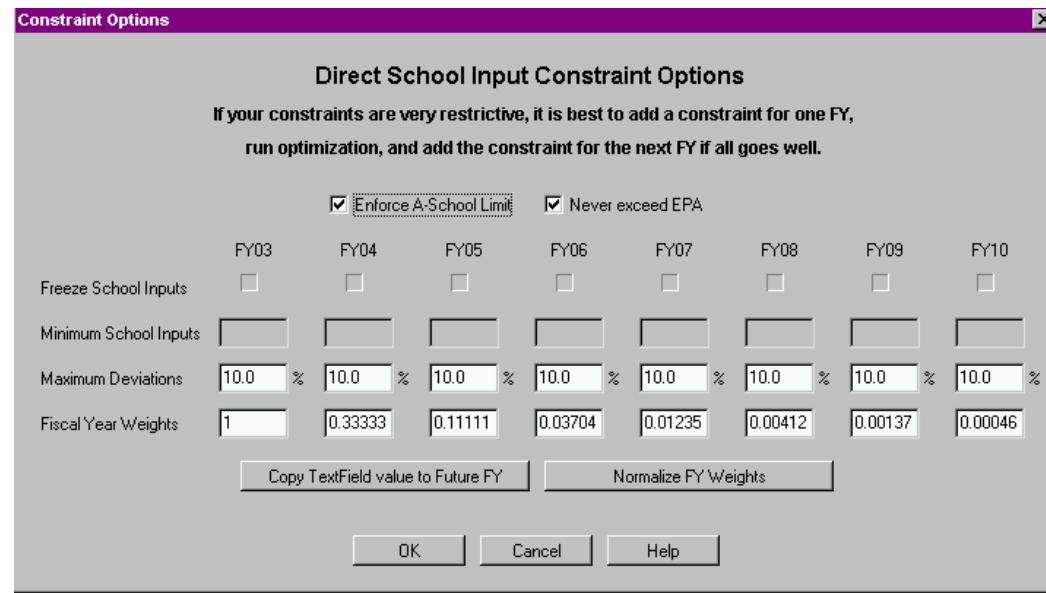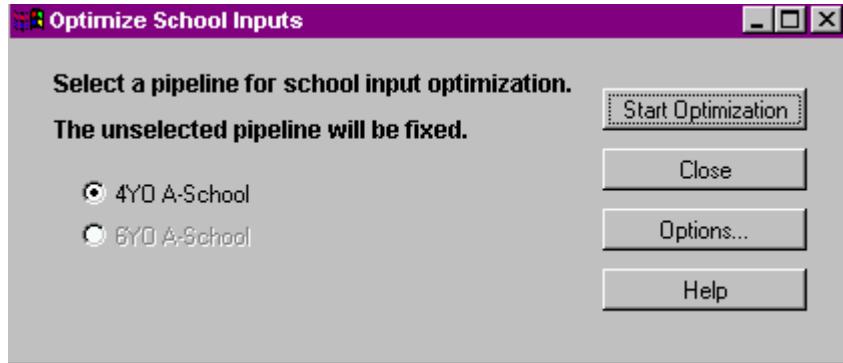
Optimized Results - C-School Planning Model proof of concept

Skill: MN (C160) **Scenario:** MN-0410 C-School Plan POC **School Plan:** C-School Plan

Skill Level: EMC **Model:** A-School **Data:** Total Non-Sch

C-School Plan

Select Model
A-School
Advancement
Rotation
Checklists
A-School
Quick Links
Change Skill
Change Scenario
Load School Plan
View/Edit Input Data
View Active Overrides
Save Scenario
View Inventory Detail

Copy to Future FYs | Optimize School Inputs | Save School Plan | Load a Different School Plan | View Female Breakout | Expo

		FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Length (weeks)	C-School	6	6	6	6	6	6	6	6	6
Limit	C-School	0	0	0	0	0	0	0	0	0
Attrition	C-School	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Input	C-School	32	40	50	47	40	41	41	41	41
Gains	Reutilizations	5	5	5	5	5	5	5	5	5
	C-School	32	38	48	46	40	40	40	40	40
	Total	37	43	53	51	45	45	45	45	45
Updated	Strength	68	79	93	101	101	101	101	101	101
	Target EPA (100%)	100	103	103	103	103	103	103	103	103
	Str / Target BA (%)	68.0%	76.69%	90.29%	98.05%	98.05%	98.05%	98.05%	98.05%	98.05%
	BA	100	103	103	103	103	103	103	103	103
	Strength / BA (%)	68.0%	76.69%	90.29%	98.05%	98.05%	98.05%	98.05%	98.05%	98.05%

Unconstrained Optimization Results - C-School Plan

SKIPPER Data Driven - Microsoft Internet Explorer

File   Edit   View   Favorites   Tools   Help

Back   Forward   Stop   Refresh   Home   Search   Favorites   History   Mail   Print   Edit   Discuss

Address http://appserver.dyncorp.com/skipperiii/datadriven.asp

| Skill: | MN (C160) | Scenario: | MN-0410 C-School Plan POC | School Plan: | C-School Plan |
| Skill Level: | EMC | Model: | A-School | Data: | Total Non-Scl |

C-School Plan

Copy to Future FYs | Optimize School Inputs | Save School Plan | Load a Different School Plan | View Female Breakout | Exp

Select Model
A-School
Advancement
Rotation
Checklists
A-School
Quick Links
Change Skill
Change Scenario
Load School Plan
View/Edit Input Data
View Active Overrides
Save Scenario
View Inventory Detail

		FY02	FY03	FY04	FY05	FY06	FY07	FY08	FY09	FY10
Length (weeks)	C-School	6	6	6	6	6	6	6	6	6
Limit	C-School	0	0	0	0	0	0	0	0	0
Attrition	C-School	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Input	C-School	32	71	37	41	42	41	41	41	41
Gains	Reutilizations	5	5	5	5	5	5	5	5	5
	C-School	32	65	40	40	41	40	40	40	40
	Total	37	70	45	45	46	45	45	45	45
	Strength	68	101	101	102	101	101	101	101	101
Updated	Target EPA (100%)	100	103	103	103	103	103	103	103	103
	Str / Target BA (%)	68.0%	98.05%	98.05%	99.02%	98.05%	98.05%	98.05%	98.05%	98.05%
	BA	100	103	103	103	103	103	103	103	103
	Strength / BA (%)	68.0%	98.05%	98.05%	99.02%	98.05%	98.05%	98.05%	98.05%	98.05%

Accession Modeling – ACDU vs. SELRES

High Level Concepts	ACDU	SELRES
EPA or Target	EMC x PG	Rating x PG
Begin Inventory	Skill x LOS x PG	Rating x PG x LOS/YQS
- Losses	At-Risk CR, Not-At Risk CR	Died, Retired, HYT, Discharged, ACDU, IRR (quit drilling, reg. transfer)
+ Gains	School, Non-School	ACDU, NPS, IRR, Lateral/Other
+/- Advancement*	Vacancy Driven Examined, Non-Examined	Vacancy Driven Examined, Non-Examined
Sea/Shore Rotation*	Rotation path probabilities (Sea to Shore, etc.) Tour lengths (PST and NST)	N/A
End Inventory	Skill x LOS x PG	Rating x PG x LOS/YQS

*In Development

Sea-Shore Rotation Modeling

- **Inputs**
  - Begin inventories with Time-to-PRD
  - Tour lengths (PST and NST)
  - Rotation path probabilities (Sea to Shore, etc.)
  - Phase-in logic
  - IA time between rotations, initial IA time and TPPH
  - EPA, School/Non-School Gains, Continuation Rates, etc.
- **Outputs by EMC, Paygrade and LOS**
  - Projected Inventories by Sea/Shore/IA
  - Projected Rotations to Sea/Shore
- **Ready for 6.5 Transitioning**

Begin and Projected Inventories (FY10) by S/S and LOS

SRB Justification and Decision Support

- **Leverage existing N132 and NPRST econometric studies/results**

- **More cost effective SRB allocations in the context of projected reenlistment and manning ROI, SRB budgets, and training and distribution**

- **Proof of concept developed under N132 guidance**

- **Current Strength, Inventory and Manning by NEC and Source Rating**

- **Target BA by LOS**

- **Projected Reenlistments and Manning % for Proposed Multiples**

- **Summary/Rollup, Budget Reconciliation and Tracking Tool**

Defining a target paygrade structure by LOS
The "new" MA LOS Distribution

EB - 3K to 5K

Accession Growth Target

Conversion target

SRB Zones A, B, C

Top 3 Issues
1. Accelerated growth
2. Training Capacity
3. Maintaining Community Health

Legend:
- INV-based BA spread
- MASN
- MA3
- MA2
- MA1
- MAC
- MACS
- MACM
- EPA by LOS (OFM)

Y-axis: Inventory… (0, 200, 400, 600, 800, 1000, 1200)
X-axis: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
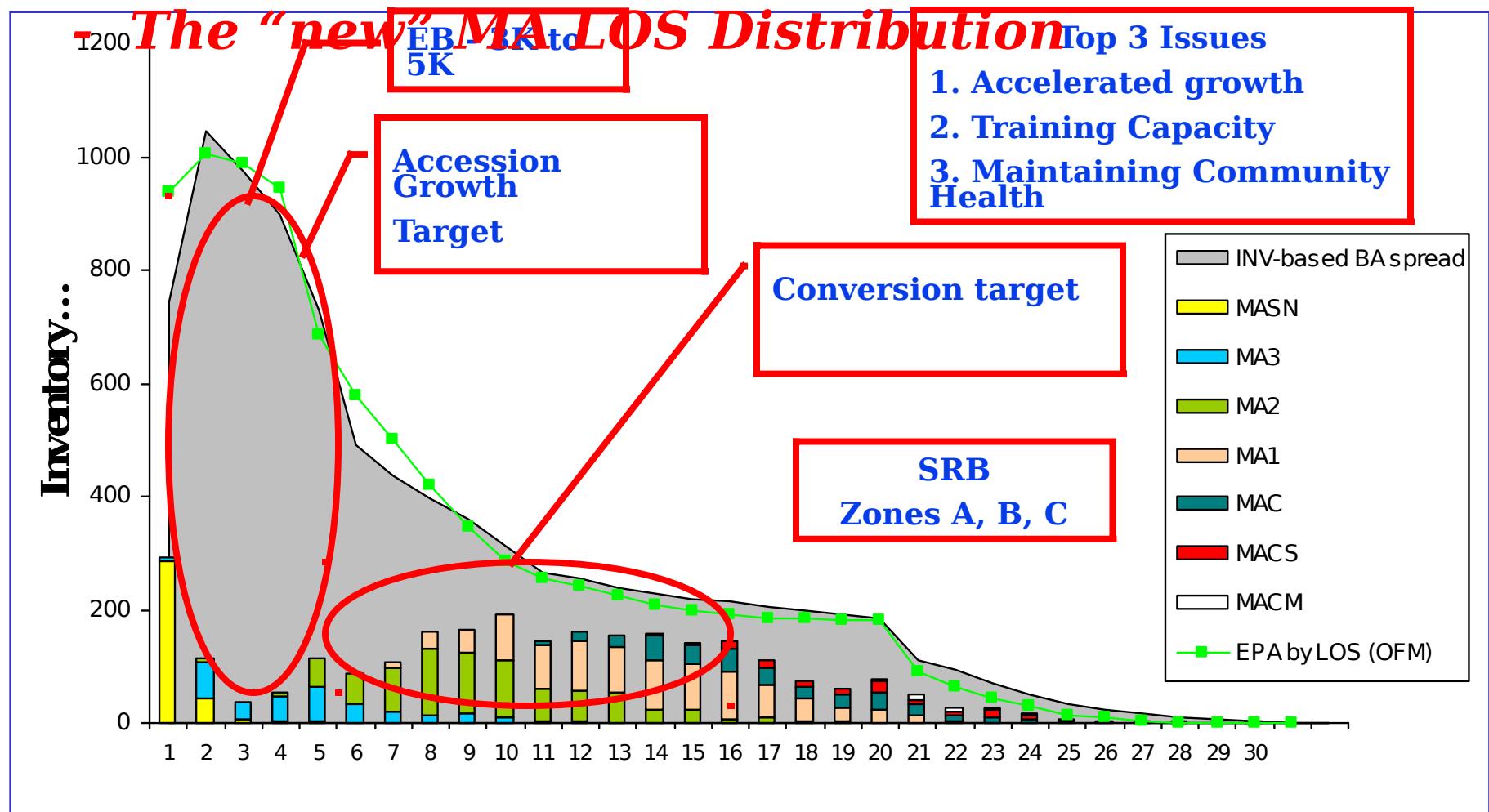
Officer Modeling

- **Utilize SKIPPER-III framework**

- **Within-year Officer Loss Forecasting (WOLF) utilizing some features of the N-Dimensional array modeling infrastructure**

- **Fully leverage SKIPPER-III in support of inventory management**

  - Accession Planning

  - Promotion Planning

  - Project Laterals

Summary

- **Existing Enlisted Decision Support Tools**
  - All work done through NPRST under 6.2/6.3 R&D
  - Proven Utility in Enlisted Plans & Policy Branch
  - SKIPPER-III (EMC and ALNAV)
    - Integrated, Expandable Navy Personnel Modeling Framework
    - Provides means to Transition towards Goal
  - Objective Force Model (ALNAV) provides Steady State Goal Determination
- **Numerous Other Capabilities close to transitioning**
  - Proof of concepts / prototypes completed
  - Leverage proven Projection Technology to complete Sea/Shore, Advancement, SRB Justification & C-School Planning Tools and Rollup/Reconciliation T&E
  - Explore Force Transition Alternatives and Force Health Monitoring Trends
    - Recruiting vs. Retention, Force Size and Shape, Costs/ROI, etc.

Contact Information

- **CSC**
  Navy Personnel Planning and Policy Analysis Group
  Defense and Information Technology Division, Alexandria VA
  - Rick Loffredo (703.461.2168) and Sanjay Nayar (703.461.2075)
  - rloffredo@csc.com,snayar@csc.com
- **NPRST**
  - Ross Andrews (901.874.4643) and David Dickason (901.874.4661)
  - ross.andrews@navy.mil,david.dickason@navy.mil
- **N132**
  - Captain Chris Arendt (703.695.3936)
  - christopher.arendt@navy.mil
- **N13T**
  - Steve Cylke, 703.614.5543
  - steven.cylke@navy.mil

Backup Slides